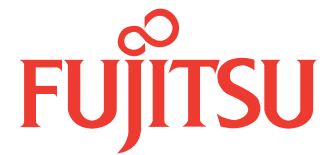


# High Performance CMOS Digital to Analog Converters



MB86060 and MB86061



## ► Features

### MB86060

- 16-bit interpolating DAC
- 100 MSa/s input data with x4 interpolation enabled
- Programmable high-pass-filtered dither
- Selectable second order noise shaping
- Internal programmable low phase noise clock multiplier
- Guaranteed synchronization between multiple devices
- Low power, 3.3V operation (385 mW @ 32 MSa/s input, x4)

## ► Description

The MB86060 is a high performance, 12-bit, 400 MSa/s Digital to Analog Converter (DAC) with a 16-bit interpolation filtering front-end. Fujitsu's proprietary architecture (patent pending) delivers high speed with low power consumption.

Design flexibility is provided by selectable input interpolation filters, programmable dither, and noise-shaping facilities. Excellent Spurious Free Dynamic Range (SFDR) performance, along with high-speed conversion and low power, make this device particularly suitable for high performance communication systems. In particular, this includes direct IF synthesis applications, such as multi-carrier, Edge, UMTS, and W-CDMA/CDMA-2000.

### MB86061

- 12-bit 400 MSa/s DAC
- True ECL digital interface (-2V supply)
- 85 dBc SFDR @ 10 MHz, 200 MSa/s (shuffle on)
- Low power +3.3V and -2V operation (308 mW @ 300 MSa/s)
- Plastic package 64-pin QFP

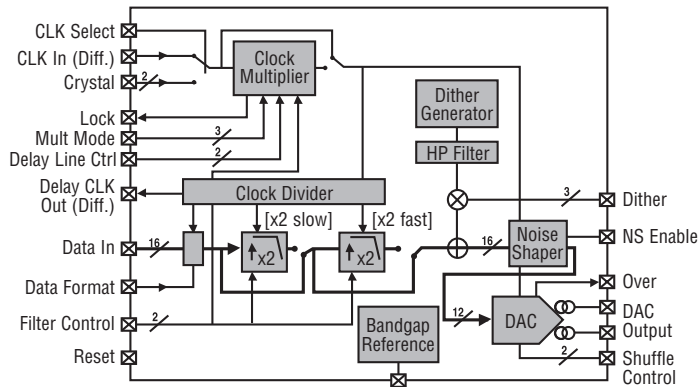
The MB86061 is a high performance, 12-bit, 400 MSa/s DAC based on the same proprietary converter core used in the MB86060.

Excellent SFDR performance, paired with high-speed conversion and low power, make the device particularly suitable for high performance communication systems, graphics, and test and instrumentation equipment applications.

Both DACs are fabricated in Fujitsu's advanced 0.35 $\mu$ m Triple Well CMOS technology. Devices are characterized and guaranteed over the full industrial temperature range of -40 °C to +85 °C.

# High Performance CMOS Digital to Analog Converters

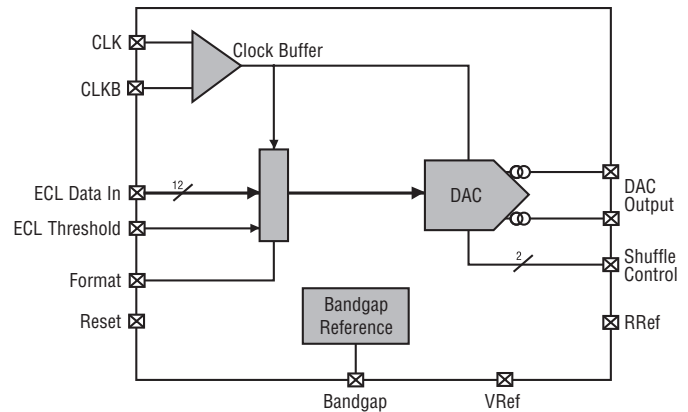
## MB86060 Functional Block Diagram



### MB86060 Interpolating Filters

The integration of interpolating filters provides a number of key benefits in system implementation. In general, improved performance can be gained by using a higher DAC conversion rate. Interpolation provides a higher level of oversampling from the generated signal. For the designer, the traditional problem with this approach has been generating the required high-speed digital data. Integrating this processing within the DAC alleviates this problem. Other benefits include a reduced effect because of the  $\text{Sinx}/x$  roll-off, which for a conventional DAC represents  $-4$  dB at Nyquist, compared to only  $-0.22$  dB with  $x4$  interpolation. The sharp cutoff and effective stopband attenuation of the digital interpolation filter significantly improve out-of-band SFDR.

## MB86061 Functional Block Diagram



### Development Kit Support

Comprehensive development kits (DK86060 and DK86061) are available for both the MB86060 and MB86061 DACs. Each kit includes an evaluation board that allows a user to quickly perform a comprehensive evaluation of the device. The board provides a complete evaluation environment for the DAC. A transformer coupled differential output interface is provided to simplify integration into target applications and development environments. An RF clock source can be connected via the transformer coupled input, and digital input data is connected via a 40-way IDC header.

The DK86060 and DK86061 development kits include the following:

- Evaluation board with a pre-installed DAC device
- Spare DAC chip for customer development
- Power supply connector
- Comprehensive user manual

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